RCRA ~~PART B~~ PERMIT

FOR THE

IDAHO NATIONAL LABORATORY

Volume 14
INTEC Liquid Waste Management System

Attachment 1, Section B
Facility Description

Revision Date: ~~January 23, 2006~~August 2006

CONTENTS

EXHIBITS

ACRONYMS

1	APS	Atmospheric Protection System
2	CFR	Code of Federal Regulations
3	CPP	Chemical Processing Plant
4	CRR	Carbon Reduction Reformer
5	DMR	Denitration and Mineralization Reformer
6	ETS	Evaporator Tank System
7	GAC	granular activated carbon
8	HEPA	high efficiency particulate air (filter)
9	IDAPA	Idaho Administrative Procedures Act
10	ILWMS	INTEC Liquid Waste Management System
11	INL	Idaho National Laboratory
12	INEEL	Idaho National Engineering and Environmental Laboratory
13	INTEC	Idaho Nuclear Technology and Engineering Center
14	IWTU	Integrated Waste Treatment Unit
15	LET&D	Liquid Effluent Treatment and Disposal
16	NWCF	New Waste Calcining Facility
17	PEWE	Process Equipment Waste Evaporator
18	RCRA	Resource Conservation and Recovery Act
19	TFF	Tank Farm Facility
20	TFT	Tank Farm Tank

B. FACILITY DESCRIPTION

B-1. General Description [IDAPA 58.01.05.012; 40 CFR 270.14(b)(1)]

This Resource Conservation and Recovery Act (RCRA) ~~Part B~~ permit addresses the Idaho Nuclear Technology and Engineering Center (INTEC) Liquid Waste Management System (ILWMS). The system consists of the Process Equipment Waste Evaporator (PEWE) system, the Liquid Effluent Treatment and Disposal (LET&D) system, ~~and~~ the Evaporator Tank System (ETS), and the Integrated Waste Treatment Unit (IWTU). The ETS ~~is also known~~was previously referred to as the High Level Liquid Waste Evaporator. The ILWMS is located at INTEC at the Idaho National Laboratory (INL).

The INTEC is located in the south-central portion of the INL Site in Butte County. The location of this complex on the INL Site is shown in Exhibit B-1. The locations of Building Numbers CPP-601, CPP-604, CPP-641, CPP-649, CPP-659, ~~and~~ CPP-1618, and CPP-1696 are shown in Exhibit B-2. The physical conditions around these buildings are typical for the INL Site, approximately 5,000 ft above mean sea level, as shown on the topographical map, Exhibit B-3. The area is relatively flat and receives little rainfall. However, poor drainage patterns can produce localized flooding that consists of shallow puddles that form near buildings during periods of rapid snowmelt or heavy rainfall. Due to the lack of rainfall and the poor quality of the surface soils, the site has little agricultural value. Wind patterns are generally in a northeast/southwest axis, with some seasonal variability.

Exhibit B-4 shows the principal culverts, ditches, and storm systems at the INTEC. Drawing PMR-02 illustrates the site drainage around the IWTU (see Appendix II to this permit). Exhibit B-5 shows the sanitary waste system at the INTEC. There are no recreational areas present on or adjacent to the INTEC.

Exhibit B-1. Location of the INTEC at the INL.

Exhibit B-2. Buildings CPP-601, CPP-604, CPP-641, CPP-659, ~~and~~ CPP-1618, and CPP-1696 at the INTEC.

Exhibit B-3. Topographic map of the INTEC.

~~**PLEASE NOTE**: This information is not available electronically.~~

Exhibit B-4. Plant drainage system at the INTEC.

Exhibit B-5. Plant sanitary waste system at the INTEC.

PEWE System Storage and Treatment

The PEWE system reduces the volume of hazardous waste sent to the INTEC Tank Farm Facility (TFF). The PEWE system evaporates the wastes, producing concentrated wastes (bottoms) and vapor condensates (overheads). The overheads are transferred to the LET&D for further processing. The bottoms generated from the PEWE go to VES-WL-101 or VES-WL-111 or are recycled back to VES-WL-133 for further processing. From VES-WL-101 or VES-WL-111, the bottoms can be sent to the CPP-604 Tank Farm Tanks (TFT), VES-WM-100, VES-WM-101, and VES-WM-102, the TFF, or to the ETS.

Building CPP-604

The Waste Treatment Building, CPP-604, contains equipment for treating INTEC liquid wastes. The Atmospheric Protection System (APS), Building CPP-649, contains equipment for further treatment of the ~~INTEC~~ PEWE and ETS offgas.

CPP-604 is located east of the Process Building, CPP-601, and south of the TFF. Exhibit B-6 is an isometric drawing of CPP-604, showing the physical arrangement of the various cells, corridors, and other areas.

CPP-604 was originally constructed in the 1951 to 1953 timeframe. In the early 1970s, an additional evaporator, EVAP-WL-129, was installed. In the early 1980s, the Evaporator Feed Sediment Tank, VES-WL-132, and the new Feed Collection Tank, VES-WL-133, were installed. Finally, in the early 1990's the CPP-604 Bottoms Collection Tank, VES-WL-111, was added to the system. The main portion of CPP-604 is located below grade and is constructed of reinforced concrete. The building is approximately 115 ft wide on its widest end (north end) and 130 ft long on its longest side (west side). Drawings 400814 and 400815 in the drawing package (Appendix II) included with this permit represent the space occupancy floor plan for CPP-604.

The building CPP-604 consists of three primary areas (See Exhibit B-6) associated with this permit.

Exhibit B-6. Building CPP-604.

Evaporator Feed Collection/Feed Sediment Tank Vaults

The vaults for the Evaporator Feed Collection Tank, VES-WL-133, and the Evaporator Feed Sediment Tank, VES-WL-132, are connected by a doorway in a common wall. A ladder provides access to the VES-WL-133 vault from the VES-WL-132 vault, and a concrete hatch seals the VES-WL-132 vault from the above-grade portion of the building. The VES-WL-133 vault is in the northeast corner of the CPP-604 building. The vault has internal dimensions of 16 ft 6 in. by 42 ft. The VES-WL-132 vault is located just south of the VES-WL-133 vault and has internal dimensions of 16 ft 6 in. by 17 ft. The vault is constructed of reinforced concrete and the floor and lower 2 ft 6 in. of the walls are lined with stainless steel. This information is described in section, D-2f (1)(b), "Requirements for Secondary Containment and Leak Detection."

Evaporator Cells, Process Condensate Collection Cell, and Feed Pump Cell

The two evaporator cells contain the evaporators, EVAP-WL-161 and EVAP-WL-129. The process condensate collection cell contains the Process Condensate Collection Tanks (VES-WL-106, VES-WL-107, and VES-WL-163). The feed pump cell contains the two feed pumps, P-WL-228 and P-WL-229. The cells are all interconnected. Access to these cells is gained through a doorway into the condensate collection cell from the access corridor or by removing the cell hatches. The process condensate collection cell has internal dimensions of 21 ft by 46 ft. The EVAP-WL-161 evaporator cell is located just north of the process condensate collection cell; it has internal dimensions of 18 ft by 22 ft. The EVAP-WL-161 evaporator cell also houses VES-WL-111. The EVAP-WL-129 evaporator cell, located east of the condensate collection cell, has internal dimensions of 14 ft by 15 ft 8 in. The feed pump cell is located just north of the VES-WL-129 evaporator cell and has internal dimensions of 9 ft 2 in. by 14 ft 6 in. Drawings 155069, 155070, and 103171 show typical concrete installation, and Drawings 103180, 158768 and 162748 show the stainless steel liner installation (See Appendix II).

CPP-604 Tank Farm Tanks, VES-WM-100, VES-WM-101, and VES-WM-102 Vaults

The TFT system tanks are located in two connected and below-grade vaults at the north end of CPP-604.

The west vault, containing VES-WM-100, is constructed of reinforced concrete and is 17 ft wide, 43 ft long, and 16 ft high. The adjacent vault contains VES-WM-101 and VES-WM-102 and is 30 ft 6 in. by 43 ft by 16 ft high. The floors and lower 3 ft 6 in. of the walls in both vaults are lined with stainless steel. Drawing 400815 in the drawing package (Appendix II) included with the permit represents the space occupancy floor plan for the CPP-604 building. Drawing 103171 shows the typical concrete and

stainless steel liner installations (See Appendix II). Drawing 103544 shows the typical stainless steel floor and wall lining details for VES-WM-100 vault and VES-WM-101 and -102 vault (See Appendix II). Drawing 103530 shows the foundation and enclosure plans, sections, and details for the VES-WM-100 vault and the VES-WM-101/VES-WM-102 vault (See Appendix II).

Bottoms Tank (VES-WL-101) and Feed Collection Tank (VES-WL-102) Vault

The vault contains VES-WL-101 and VES-WL-102 and is constructed of reinforced concrete that ranges in thickness from 2 to 4 feet. This vault is 30 ft wide, 43 ft long, and 16 ft high.

The secondary containment is constructed of concrete floor lined with a Hypalon® membrane (registered trademark of DuPont), which extends three feet up the walls. The main body of the membrane has a 45-mil nominal thickness and is reinforced with denier polyester fabric scrim. Unreinforced membrane that is used for corner reinforcement and around the sump liner insert, which must be molded to fit, is 60-mil nominal thickness. The Hypalon® membrane conforms to the requirements of the National Sanitation Foundation Standard 54 (revised May 1991) Type 3-45, (industrial grade chlorosulfonated polyethylene). All seams in the secondary containment are heat-welded or adhesive bonded to avoid any cracks or gaps. The membrane is sealed around the tank saddles by silicone rubber sealant that is capable of withstanding the expected waste solutions for extended periods of time. Drawing 103530 shows the foundation and enclosure plans, sections, and details, and Drawings 370862, 370863, 370864, 370865, 370866, and 370867 show the liner installations and sections for the VES-WL-101/VES-WL-102 vault (See Appendix II).

Building CPP-601

CPP-601 consists of five levels. The lowest level (below grade) contains the WG/WH tanks and vaults. The building is constructed of reinforced concrete, and the upper level (above grade), of structural steel. The building is rectangular: 244 ft by 102 ft and a maximum of 95 ft 3 in. high, extending from 57 ft 6 in. below grade to 37 ft 9 in. above grade at the peak of the roof. Drawing 340569 represents the space occupancy floor plan for CPP-601. (The drawing package included with this permit is found in Appendix II). Drawings 103057 and 103254 show typical concrete and stainless steel liner installation (Appendix II).

CPP-601 is joined on the north by a common firewall with the Laboratory Building, CPP-602. The northeast corner is connected to the Office Building, CPP-630. CPP-601 consists of 25 process cells in two rows extending the length of the building, with various corridors (operating, access, service, vent,

and sampling corridors) extending between and outside the cell rows. Most of the process equipment is controlled from an operating corridor that runs the length of the building between the two rows of cells. The operating corridor contains valves that control the flow of solutions, instruments for monitoring the properties of the solutions, and flow diagrams to guide the operators. A service and access corridor is below the operating corridor. Sampling and ventilation corridors flank the rows of cells. The top story of the building is an unpartitioned area used for storage and makeup of chemical solutions. An isometric of the building is shown in Exhibit B-7. The vaults are shown in Exhibit B-8.

The four WG/WH tanks, also known as the Deep Tanks, are on the lower level of CPP-601. Two tanks are located in each of two stainless-steel-lined, reinforced concrete cells. Each cell is 22 ft by 42 ft (outside dimensions). The interior dimensions of the vaults are 38 ft 6 in. by 15 ft. The vaults are lined with stainless steel on the floor and 3 ft up the walls. Both vaults are provided with sumps.

Building CPP-641

The Westside Waste Holdup System (VES-WL-103, VES-WL-104, and VES-WL-105) is housed in CPP-641, which is a cinderblock building 22 ft long and 15 ft wide. CPP-641 contains the instrumentation, motor control center, sample station, and jet valves for the tanks.

The three tanks are located in two underground vaults north of CPP-641. The vault complex is 39 ft 8 in. long and 20 ft wide (outside dimensions). The east vault is 18 ft by 22 ft by 12 ft 6 in. high. The west vault measures 18 ft by 12 ft 2 in. by 12 ft 6 in. high. VES-WL-104 and VES-WL-105 share the east vault; VES-WL-103 is located in the west vault. The VES-WL-103 vault floor and lower 4 ft 9 in. of the walls are lined with Hypalon® with a stainless steel insert in the sump. The remainder of the walls and ceiling are coated with an epoxy coating. The VES-WL-104 and VES-WL-105 vault floors and lower 2 ft 6 in. of the walls are lined with Hypalon® with a stainless steel insert in the sump. The remainder of the walls and ceilings are coated with epoxy coating. A ladder in CPP-641 provides access to the VES-WL-103 vault. Access to both vaults can be gained by removing hatches and concrete plugs located north of CPP-641. Drawing 057757 represents the space occupancy floor plan for the CPP-641 building. Drawing 111809 demonstrates the concrete plan sections and details for the VES-WL-103 vault and the VES-WL-104 and -105 vault. Drawing 111810 demonstrates the concrete plan sections and details for the control house. The drawings are included in Appendix II. Exhibit B-9 shows an overview of the vault configuration.

Exhibit B-7. Isometric of CPP-601.

Exhibit B-8. CPP-601 Process Building cross-sectional view.

Exhibit B-9. Westside Holdup Tank System.

Building CPP-1618 LET&D System Storage and Treatment

The LET&D treatment process reduces the volume of liquid waste by fractionating PEWE overhead condensates into saturated steam/offgas and acid fractions. The fractionators separate the waste solution into water (overheads) and nitric acid (bottoms).

Wastes are treated and stored in tanks in CPP-1618. The LET&D system includes tanks and ancillary equipment in the CPP-659 Annex and in CPP-1618. For a detailed description of the LET&D system, see Section D of this ~~Part B P~~permit.

The Liquid Effluent Treatment and Disposal (LET&D) facility is currently used to concentrate nitric acid solutions. Construction of the facility was completed in 1992. System operability tests were completed and waste storage and treatment were started in January 1993.

The LET&D facility is a three-story, steel-frame, metal-sided structure. It has two reinforced concrete process cells. The Acid Fractionator Cells have internal dimensions of 17 ft by 14 ft 6 in. The cell walls are epoxy-coated, and the lower 3 ft of the walls and the floors are lined with stainless steel. The cells contain the Acid Fractionator Waste Feed Head Tank, VES-WLK-197; the acid fractionator units, FRAC-WLL-170 and FRAC-WLK-171; the Bottoms Tank, VES-WLL-195; and associated ancillary equipment. The remaining portions of the three-story structure contain the process offgas system, sample cell, and utility support systems. Drawing 092440 represents the space occupancy floor plan for CPP-1618 (see Appendix B-1 of the original application). Exhibit B-10 shows the equipment arrangement in the first floor plan of the LET&D facility. Drawings 347791, 347796, and 347798 (see Appendix II) illustrate the CPP-1618 concrete and liner details.

LET&D Acid Recycle Tank Building and Acid Head Tank (CPP-659 Annex)

The Acid Recycle Tank, VES-NCR-171, and Acid Head Tank, VES-NCR-173, are located in the CPP-659 Annex adjacent to the New Waste Calcining Facility (NWCF, CPP-659). The CPP-659 Annex is used to house a 22,500 gallon stainless steel tank which stores acid produced by the LET&D fractionation process. VES-NCR-173 is a stainless steel tank, which stores nitric acid prior to being transferred throughout the INTEC for reuse. The tank has capacity of approximately 90 gallons. A sump, 4 ft by 4 ft by 9 ft 9 in., is located in the corner of the annex. The vault has internal dimensions of 17 ft 4 in. by 41 ft 3 in., with a stainless steel wainscot 4 ft 8 in. high. The floor, sump, and walls are lined with stainless steel to a height of 4 ft 8 in., to contain leaks and spills. Drawing 176263 illustrates the CPP-659 Annex concrete and drawing 176265 (see Appendix II) illustrates the stainless steel liner.

Exhibit B-10. LET&D facility first floor plan.

LET&D Cells and Vaults

LET&D Fractionator Cell 1

Acid Fractionator Cell 1 is 17 ft long and 14 ft 6 in. wide, with a stainless steel liner on the floor and 3-ft up the walls. The cell is constructed of steel-reinforced concrete. The cell has a door in the east wall. In front of the door is a step measuring 3 ft 10 in. by 3 ft 10 in. by 4 in. The floor is sloped toward a sump, which is located slightly to the northeast of the center of the cell. The cell walls are steel-reinforced concrete coated with epoxy.

LET&D Fractionator Cell 2

Acid Fractionator Cell 2 is 17 ft long and 14 ft 6 in. wide. The cell is constructed of steel-reinforced concrete with a stainless-steel liner on the floor and 3-ft up the walls. The cell has a door in the east wall. The floor is sloped toward a sump, which is located in the cell.

The vault containing the Bottoms Tank, VES-WLL-195 is located in northwest corner of Fractionator Cell 2. Although the floor of the fractionator cell does not slope directly to the Bottoms Tank vault, the vault would serve as the containment mechanism if a leak caused the sump to overflow. The vault containing the Bottoms Tank is completely lined with stainless steel. The floor of the Bottoms Tank vault slopes toward the west, where the vault sump is located.

Construction Specifications for CPP-601, CPP-604, CPP-641 and CPP-1618

Buildings CPP-604 and CPP-601 were constructed using the same construction specifications (Specification RC-542). Concrete floors and walls were constructed in accordance with the "Concrete and Reinforced Concrete" section of that specification (included as Appendix B-2 of the original application). Painting was done in accordance with the "Painting" section (included as Appendix B-3 of the original application), and structural steel was fabricated and erected in accordance with the "Structural Steel" section (included as Appendix B-4 of the original application).

Building CPP-641 was constructed in accordance with the "Concrete Masonry" specifications, included as Appendix B-5 of the original application. The epoxy paint specifications used throughout INTEC are included as Appendix B-6 of the original application.

These specifications are typical of the specifications used for the construction of the PEWE system. Modifications were performed under very similar specifications, using standards applicable at the time of construction. A sample modification specification for the addition of the spare evaporator, EVAP-WL-129, is provided in Appendix B-7 of the original application.

Appendix II of contains applicable structural drawings for the PEWE system. All of the PEWE system vaults are lined with stainless steel, except the CPP-641 vaults, DVB-OGF-D8, and the VES-WL-101/VES-WL-102 vault. The valve box DVB-OGF-D8 is painted with acid resistant epoxy coating that is compatible with the waste. The CPP-641 vaults and VES-WL-101/VES-WL-102 vault are lined with a Hypalon® membrane, which is compatible with the waste being stored/treated. The containment and liners are further discussed in Section D-2f.

Building CPP-659 ETS Treatment and Storage

The ETS reduces the volume of hazardous waste sent to and stored in the INTEC TFF. The ETS evaporates the wastes, producing concentrated wastes (bottoms) and vapor condensates (overheads). The overheads are collected in VES-NCC-122 and transferred to the PEWE for further processing. The bottoms are collected in VES-NCC-119 and sent to the TFF. Other transfer routes are available for VES-NCC-119 and VES-NCC-122 as needed to meet operational requirements.

The ETS includes tanks and ancillary equipment in building CPP-659. For a detailed description of the ETS, see Section D of this ~~Part B P~~permit. Drawing 057807, 057808, and 057812 represents the space occupancy floor plan for CPP-659 (see Appendix ~~B-1~~II to this permit). An isometric of the building is shown in Exhibit B-11. The cells are shown in the space occupancy floor plan for CPP-659. Drawings 132376 through 132383, 132390 through 132397, and 132444 through 132446 illustrate the CPP-659 concrete details (see Appendix ~~B-1~~II to this permit). Drawings 132358 through 132359, 132361, 134619 through 134624, and 383716 illustrate the CPP-659 liner details (see Appendix ~~B-1~~II to this permit).

Blend and Hold Cell

The blend and hold cell (room 215) is used to house the feed tanks for the ETS (VES-NCC-101, VES-NCC-102, VES-NCC-103), the constant head feed tank (VES-NCC-152), and EVAP-NCC-150 (includes VES-NCC-150, HE-NCC-351, HE-NCC-350). The blend and hold cell has a 32 ft 4 in. by 24 ft, floor area and is constructed of steel reinforced concrete with a stainless steel liner and a 3-ft high stainless-steel wainscot. The cells stainless-steel liner system slopes to a floor drain and provides

secondary containment to the tanks. The floor drain is equipped with a valve that is normally closed and leak detection in the stainless steel piping that is connected to VES-NCC-119. The stainless steel is compatible with the waste and decontamination solutions received at the ETS.

Offgas Cell

The offgas cell (room 207) houses the Scrub Hold Tank (VES-NCC-108) and the scrub solution-recycle pumps. The offgas cell has a 33 ft 4 in. by 16 ft 3 in. floor area and is constructed of steel reinforced concrete with a stainless steel liner and a 3-ft-high wainscot. A sloped, 1-ft-deep gutter runs along the length of the east wall. The floor drain is equipped with a valve that is normally closed and leak detection in the stainless steel piping that is connected to VES-NCC-119. The stainless steel is compatible with the waste and decontamination solutions received at the ETS.

Adsorber Cell

The adsorber cell (room 206) houses the Vent Condenser Knockout Drum (VES-NCC-136), and the Mist Collector (VES-NCC-116 and associated heat exchangers. The adsorber cell has a 26.5 ft by 31.5 ft floor area constructed of steel reinforced concrete with a stainless steel liner and a 3-ft-high wainscot. The floor has a sump that is drained to VES-NCC-119. The stainless steel is compatible with the waste and decontamination solutions received at the ETS.

Hot Sump Tank Cell

The hot sump tank cell (room 101 and 102), located on the forth level, house the two hot sump tanks (VES-NCC-119 and VES-NCC-122) and a recirculation pump. The hot sump tank cell is 24 ft 2 in. by 24 ft 6 in. with a height of 17ft 6 in and is constructed of steel reinforced concrete with a stainless steel liner. The valve access room is 19 ft 6 in. by 11 ft 10 in. and is constructed of steel reinforced concrete with a stainless steel liner and a 3-ft-high stainless-steel wainscot. The floor has a sump, which can be jetted to the fluoride hot sump tank. The cell floor is sloped to drain to a gutter on the west side of the cell, and the gutter drains to the south and into the sump.

Exhibit B-11. Isometric View of Building CPP-659

Building CPP-1696 IWTU Treatment and Storage

Sodium bearing waste and newly generated liquid waste are transferred to the Waste Feed Tank, and fed to the first steam reformer, the Denitration and Mineralization Reformer (DMR). The DMR, operating in a chemically reducing mode, evaporates liquids, volatilizes trace organics, converts nitrates to nitrogen gas, and converts all nonvolatile constituents of the feed into a sodium carbonate-based, granular, solid treatment product. The reducing condition in the DMR is created by the injection of fluidizing steam, coal, and a small amount of oxygen to react with the coal to produce energy in the bed.

The solid product from the DMR is pneumatically transferred to the Product Receiver/Cooler before being drained from the process.

The process gas from the DMR; consisting mostly of steam, nitrogen, carbon dioxide, and hydrogen, with small amounts of carbon monoxide, nitrogen oxides (NO_x), short-chained organics, and acidic gases; is then filtered through the high temperature Process Gas Filter. This filtration removes the finely divided product solids and carbon fines that elutriate out of the DMR along with the process gas stream. The filtered gas stream is then introduced into the bottom of the second steam reformer, the Carbon Reduction Reformer (CRR). A measured quantity of oxygen/air is also introduced at three locations within the CRR fluidized bed through a set of distributors located at the same level and above the fluidizing process gas input distributors. The CRR, operating in a reducing mode in the bottom of the fluidized bed reduces a significant portion of the residual NOx in the process gas to nitrogen. The CRR operates in an oxidizing mode in the upper section and freeboard of the fluidized bed that oxidizes the hydrogen, carbon monoxide, and organics in the gas stream to carbon dioxide and water. Carbon is required to maintain the CRR in the desired operating temperature range.

The CRR process gas stream, now almost entirely nitrogen, oxygen, water vapor, and carbon dioxide, is cooled in the Offgas Cooler, filtered in the Offgas Filter, passed through high efficiency particulate air (HEPA) filters and a granular activated carbon bed to remove mercury. The final offgas is monitored by a Continuous Emissions Monitoring System (CEMS), combined with HEPA-filtered building ventilation, and discharged to the stack.

Approximately 20 to 50% of the solid products produced in the DMR are elutriated to the Process Gas Filters as fines. The product fines collected in the Process Gas Filter are transferred to one of the

Product Receiver/Coolers. Small quantities of solid materials may also be withdrawn from the bottom of the CRR and the Offgas Filter and collected in the Product/Receiver Coolers.

The IWTU includes tanks and ancillary equipment located in Building CPP-1696. CPP-1696 is a two-story, steel-frame, metal sided structure, with the exception of the lower 15 ft of the Vault Storage Area, which is constructed of reinforced concrete. The building is 380 ft 6 in. in its longest dimension (north-south) and 197 ft 6 in. in its widest dimension (west-east). The building contains a multi-tiered roof that is 75 ft at its tallest point. The building contains shielded process areas, some non-shielded filtration and air pollution control equipment, a covered link to the Vault Storage Area, and the container storage area itself. There is also a mezzanine adjacent to the process area that houses the Building Ventilation HEPA Filters. For a detailed description of the IWTU, see Section D of this permit. Drawings 632830 and 632831 represent the space occupancy floor plan for CPP-1696 (see Appendix II to this permit). An isometric drawing of the building is shown in Exhibit B-12. The RCRA containment areas for CPP-1696 are depicted in Drawing PMR-01 (see Appendix II to this permit). Drawings 632451, 632452, 632503, 632504, 632512, 632513, and 632554 illustrate typical CPP-1696 concrete details (see Appendix II to this permit). Drawings 632483 and 632484 show typical CPP-1696 liner details (see Appendix II to this permit).

IWTU Process Module

The IWTU Process Module contains the Waste Feed Tank, DMR, Process Gas Filter, and Offgas Filter. The total floor space is 37 ft 2 in. by 34 ft 5 in. The IWTU Process Module is constructed of steel reinforced concrete. The floor and lower 2 ft of the walls are lined with stainless steel. The walls above the lined containment are epoxy-coated.

The floor slopes to a collection trough along the south wall of the cell. The trough drains to a sump equipped with leak detection. Upon a sump alarm, the collected liquid is jetted to the Waste Feed Tank, VES-SRC-131, or the NWCF (VES-NCC-101, VES-NCC-102, or VES-NCC-103). Both the stainless-steel liner and the epoxy coating are compatible with the wastes and decontamination solutions managed at the IWTU.

Carbon Reduction Reformer Cell

The CRR cell houses the CRR and Offgas Cooler. The CRR cell has a 19 ft 6 in. by 34 ft 5 in. floor area and is constructed of steel reinforced concrete with a stainless steel liner that extends 1 ft 8 in. up the walls. The walls above the lined containment are epoxy coated. Both the stainless-steel liner and the epoxy coating are compatible with the wastes and decontamination solutions managed at the IWTU.

Canister Filling Cells

The Canister Filling Cells house the Product Receiver/Cooler tanks (above), the tank cooling/filtering loop, and the canister filling and capping stations (below). Each Canister Filling Cell has a 17 ft 6 in. by 23 ft 8 in floor area and is constructed of steel reinforced concrete with a stainless steel liner that extends 1 ft up the walls. The walls above the lined containment are epoxy-coated. The stainless-steel liner and epoxy coating are compatible with the wastes and decontamination solutions managed at the IWTU.

Solids Sample Cell

The Solids Sample Cell contains the sample receiver and pneumatic transfer equipment. The cell has a 4 ft by 8 ft floor area and is constructed of steel reinforced concrete with a stainless steel liner that covers the floor and lower 1 ft of the walls. The walls above the lined containment are epoxy-coated. Both the stainless-steel liner and the epoxy coating are compatible with the wastes and decontamination solutions managed at the IWTU.

Vault Storage Area

The vault storage area houses the storage vaults that contain the filled canisters. After filling, the filled canisters are placed in concrete vaults that can accommodate a 4X4 array of canisters. A concrete lid is placed on the vault and the vaults are then moved to the Vault Storage Area. The Vault Storage Area has a 114 ft by 123 ft 6 in. floor area constructed of steel reinforced concrete.

Exhibit B-12. Isometric Drawing of the IWTU, Building CPP-1696